

FOLDING EXERCISE TREADMILL WITH FRONT INCLINATION

BACKGROUND OF THE INVENTION

1. Field of the Invention

5 The present invention relates to an exercise treadmill and more particularly, to an exercise treadmill having a fold-up capability and a front that is adjustable in the vertical direction.

2. Description of the Related Art

 A conventional exercise treadmill essentially includes a base frame and a
10 treadmill frame. The base frame is placed on the floor, having an upright upwardly extended from the front side for holding by the user walking on the treadmill belt of the treadmill frame. In order to simulate walking on a slope, the treadmill frame is provided with a locating hole on the front side for connection to one of a vertical row of locating holes at the front side of the base frame selectively by a lock pin. After use,
15 the user can lift the rear side of the treadmill frame and receive the treadmill frame to the upright of the base frame to reduce space occupation.

 This manual design is suitable for a small scale exercise treadmill, not practical for use in a big scale exercise treadmill. When received in the non-operative position, an additional lock device is necessary to lock the treadmill frame in the
20 received position. A mistake during operation may cause the treadmill frame to fall, resulting in an accident.

SUMMARY OF THE INVENTION

 It is the primary objective of the present invention to provide an exercise treadmill, which enables the treadmill frame to be received in the non-operative
25 position or adjusted to the desired angle of inclination by means of an electric control.

It is another objective of the present invention to provide an exercise treadmill, which provides a self-locking function during turning of the treadmill frame, ensuring a safety use.

To achieve these objectives of the present invention, the exercise treadmill
5 comprises a base frame, a treadmill frame having a front side detachably connected with the base frame, a locking mechanism provided at a front side of the base frame for locking the front side of the treadmill frame to the base frame, at least one crank arm pivoted to the treadmill frame and having a sliding member for supporting on the floor, and a lifting mechanism mounted in the treadmill frame. The lifting mechanism
10 includes a motor, and a transmission unit coupled between the motor and the crank arm for moving the sliding member of the crank arm on the floor upon operation of the motor so as to either force the front side of the treadmill frame to move vertically relative to the base frame while the front side of the treadmill is detached from the base frame or force a rear side of the treadmill frame to move vertically relative to the base
15 frame while the front side of the treadmill is locked to the base frame by the locking mechanism.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top view of an exercise treadmill according to the present invention, wherein an upright of the base frame is not shown.

20 FIG. 2 is a left side view of the present invention showing the treadmill frame set in horizontal.

FIG. 3 is similar to FIG. 2 but showing the front of the treadmill frame lifted.

FIG. 4 is a left side view of the present invention showing the received status of the exercise treadmill.

25 FIG. 5 is a sectional view taken along line 5-5 of FIG. 1, showing the stop

flange of the lock pin inserted through the locating plate; and

FIG. 6 is similar to FIG. 5 but showing the stop flange of the lock pin stopped against the stop rods of the locating plate.

DETAILED DESCRIPTION OF THE INVENTION

5 As shown in FIGS. 1 and 2, an exercise treadmill provided by a preferred embodiment of the present invention is shown comprised of a base frame 10, a treadmill frame 20, a locking mechanism 30, two crank arms 40, and a lifting mechanism 50.

The base frame 10 is a rectangular open frame formed of metal rod members
10 by welding for placing on the floor. The base frame 10 comprises an upright 12 upwardly extended from the top near the front side for holding by the user using the exercise treadmill, a control panel 13 mounted on the upright 12, a retaining member, namely a lug 14, at the front side of the upright 12, and two upright sidewalls 15 bilaterally longitudinally disposed at the front left and right sides. The sidewalls 15
15 each have a vertically extended guiding slot 16 and a sliding slot 17 horizontally forwardly extended from the bottom end of the guiding slot 16 to the periphery of the sidewall.

The treadmill frame 20 is mounted on the base frame 10, having a front side 21, a rear side 22, a left side 23, a right side 24, a walking belt 25 provided between the
20 left side 23 and the right side 24 for walking by the user using the exercise treadmill, a foot member 26 at the bottom of the rear side 22 for supporting the rear side of the treadmill frame 20 on the floor, a first retaining member, namely a first lug 27 having a through hole, at the bottom of the front side 21, two second retaining members, namely two second lugs 28, symmetrically disposed at the left side 23 and the right side 24 and
25 connected with each other by a rod 28a, two locating rods 29 respectively outwardly

protruded from the left side 23 and the right side 24 between the first lug 27 and the second lugs 28 and respectively coupled to the guiding slots 16 of the base frame 10.

Referring to FIGS. 5 and 6 and FIGS. 1 and 2 again, the locking mechanism 30 comprises a lock pin 32, a locating plate 33, and a compression spring 34. The lock pin 32 has a stop flange 35 protruded from the periphery of the middle part. The locating plate 33 has a center insertion hole 36, and two stop rods 37 perpendicularly symmetrically extended from one side. The lock pin 32 is transversely provided at the front side of the base frame 10 and inserted through the center insertion hole 36 of the locating plate 13, having one end extended out of the base frame 10 and provided with a handle 31, and the other end inserted into the trough hole of the first lug 27 of the treadmill frame. When pushing the lock pin 32 toward the inside of the base frame 10 to force the stop flange 35 through the center insertion hole 36 of the locating plate 13, the lock pin 32 is engaged into the lug 14 of the base frame 10 and the through hole of the first lug 27 of the treadmill frame 20 to lock the front side of the treadmill frame 20 to the base frame 10. On the contrary, when pulled the lock pin 32 outwards and then rotated the lock pin 32 through an angle to disengage the lock pin 32 from the lug 14 of the base frame 10 and the first lug 27 of the treadmill frame 20 and to stop the stop flange 35 of the lock pin 32 against the stop rods 37 of the locating plate 33, the treadmill frame 20 is unlocked from the base frame 10. Further, the spring member 34 is sleeved onto the lock pin 32 to push the lock pin 32 inwards from the unlocking position toward the locking position.

The two crank arms 40 are respectively pivoted to the rod 28a that is connected to the second lugs 28 of the treadmill frame 20, each having a first segment 41 and a second segment 42 integrally extended from an end of the first segment 41 at an angle at an angle. The first segment 41 has the distal end mounted with a sliding

member, namely a roller 43, which is supported on the floor. Torsional springs 44 are respectively sleeved onto the rod 28a. The torsional spring 44 has a distal end fastened to the treadmill frame and the other distal end pressed on the first segment 41 of the crank arm 40 for imparting a downward force to the first segment 41 of each crank arm 40 and an upward force to the treadmill frame 20.

The lifting mechanism 50 is mounted in the treadmill frame 20, comprising a motor 51 and a transmission unit 52 driven by the motor 51. The output shaft 53 of the motor 51 is a screw rod extended in parallel to the length of the treadmill frame 20. The transmission unit 52 is comprised of a sliding block 54 threaded onto the output shaft 53 of the motor 51, and two parallel links 55 pivotally connected to two lateral sides of the sliding block 54. The links 55 each have one end respectively pivoted to the sliding block 54 and the other end respectively pivoted to the distal ends of the second segments 42 of the crank arms 40. During rotary motion of the output shaft 53 of the motor 51, the sliding block 54 is forced to move along the output shaft 53, thereby causing the links 55 to move the crank arms 40, and therefore the rollers 43 are moved forwards or backwards on the floor.

Referring to FIGS. 3 and 4, when wishing to increase the angle of inclination of the treadmill frame 20, hold the handle 31 of the lock pin 32 with the hand and then pull the lock pin 32 outwards to unlock the front side of the treadmill frame 20 from the base frame 10, and then operate the control panel 13 to rotate the output shaft 53 of the motor 11 of the lifting mechanism 50 clockwise (viewed from the front side of the treadmill frame 20), causing the slide 54 to move along the output shaft 53 toward the rear side 22 of the treadmill frame 20. At this time, the links 55 are forced to turn the crank arms 40 and to move the rollers 43 on the floor toward the front side, and therefore the treadmill frame 20 is turned about an axis passing through the foot

member 26 to lift the front side 21 of the treadmill frame 20 from the base frame 10 and the locating rods 29 are moved upwards along the respective guiding slots 16. When wishing to reduce the angle of inclination of the treadmill frame 20, operate the control panel 138 to rotate the output shaft 53 of the motor 51 of the lifting mechanism 50 in counter-clockwise direction, thereby causing the sliding block 54 to move along the output shaft 53 toward the front side 21 of the treadmill frame 20. At this time, the links 55 are forced to turn the crank arms 40 and to move the rollers 43 on the floor toward the rear side, and therefore the treadmill frame 20 is turned about an axis passing through the foot member 26 to lower the front side 21 of the treadmill frame 20 to the base frame 10 and the locating rods 29 are moved downwards along the respective guiding slots 16.

When wishing to receive the treadmill frame 20, move the treadmill frame 20 to horizontal according to the aforesaid angle of inclination adjustment procedure, and then push the lock pin 32 toward the inside of the base frame 10 to lock the front side 21 of the treadmill frame 20 to the base frame 10, and then operate the control panel 13 to rotate the output shaft 53 of the motor 51 of the lifting mechanism 50 in clockwise direction and to further move the sliding block 54 along the output shaft 53 toward the rear side 22 of the treadmill frame 20, thereby causing the links 55 to pull the second segments 42 of the crank arms 40. At this time, the rollers 43 are moved on the floor toward the front side, thereby causing the treadmill frame 20 to be turned about the lock pin 32 and to lift the rear side 22 of the treadmill frame 20 from the floor, and therefore the treadmill frame 20 is received to the upright 12 and held in the non-operative position. Because the sliding block 54 is coupled to the output shaft 53 through screw joint, the output shaft 53 can drive the sliding block 54 to move; however the sliding block 54 cannot drive the output shaft 53 to rotate. This one-way

self-locking function prevents falling of the treadmill frame 20 accidentally during lifting or receiving operation.

By means of the aforesaid design, the exercise treadmill can be electrically controlled to adjust the angle of inclination and automatically received in the
5 non-operative position.

Although a particular embodiment of the invention has been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.